



Fady Saleh

Notching the Industry

How the iPhone changed displays in the smartphone industry

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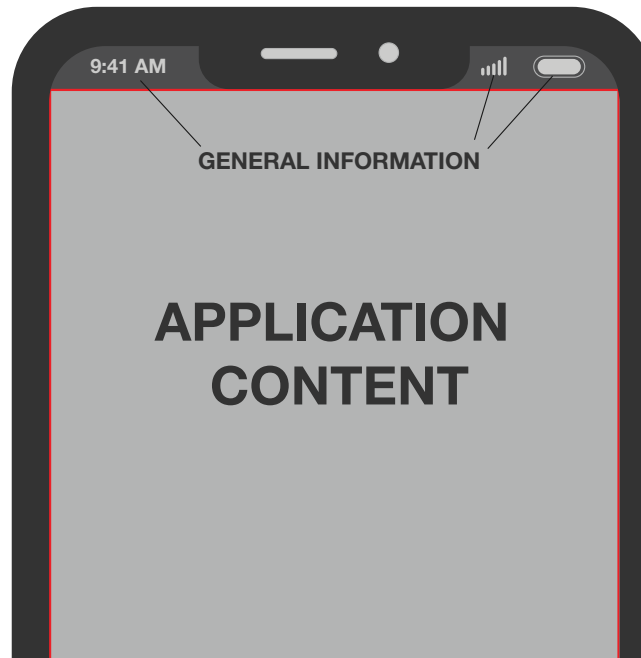
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In 2017, Apple set out to change the way consumers and manufacturers perceived smartphone displays. This article goes in-depth on the design process behind that change and the impact it had on the industry.

The iPhone X seems to have been designed with one simple objective in mind. That objective is increasing the screen to body ratio of the phone. This has been achieved on Apple's X & 11 models through two methods.

The first was creating a so-called "notch" at the top of the device. This notch housed elements that are essential to being on the front of the display such as the front camera, speaker, microphone and sensors. By having a notch, it will allow for more screen space at the top of the device where it can display information such as the time, battery, notifications, etc. This in return will allow application content to take up as much of the display as possible.

The second method was reducing / eliminating the bottom bezel of the



device to allow for a larger display. This was achieved by removing the home button and replacing it with Apple's new technology Face ID. This technology unlocks your phone by recognising your facial features instead of placing your finger on the home button scanner, thus they removed the home button.

The iPhone's bottom bezel has been shrunk extensively to allow for more display space. This was done through the implementation of OLED screen technology. OLED screens are much more flexible and malleable than standard LCD or LED screens. Apple utilised this difference by bending the display to wrap around the bottom of the phone.

In most smartphones there's a noticeable bezel at the bottom of the phone screen. This due to the way smartphone are manufactured and designed. The bottom bezel exists for the display to connect to the display controller thus connecting to the rest of the phone. By bending the screen itself, Apple was able to have it curve out around the bottom and

connect to the display controller from the inside making the display extend to the edge. This design approach was a massive undertaking for apple as it was time consuming and costly. Having to outsource the manufacturing of the displays to their competitor, Samsung.

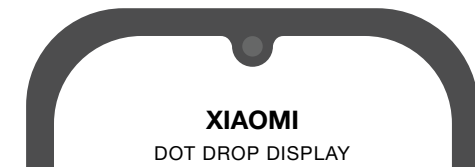
The new notch display of the iPhone X & 11 have made critical impressions and changes around the global industry of smartphones. The initial reception to the iPhone X display was critical. Memes and jokes were posted all around the internet calling the notch ridiculous and ugly. While initial reception was negative, critics and others applauded Apple for taking a step towards innovating displays in the smartphone industry.

Shortly after the release of iPhone X, many smartphone manufacturers such as Samsung, Huawei and Xiaomi started implementing notches into their flagship phones. As shown different manufacturers and companies have

developed their own “notch”, following the trend that Apple set out with the iPhone X.

Now in 2019, all new flagship and mid-tier phones have a notch, and they’re getting smaller and smaller every new release. Xiaomi recently unveiled their new under-screen camera that sits beneath the display. The camera becomes covered with a special low-reflective glass with high transmittance. This allows the display to transmit above the camera and blanking out when the camera is turned on.

Apple’s efforts to innovate the display screen of the iPhone has caused a huge change in the industry. Manufacturers approach to designing displays has become one of maximising screen space by minimising bezels and creating notches.



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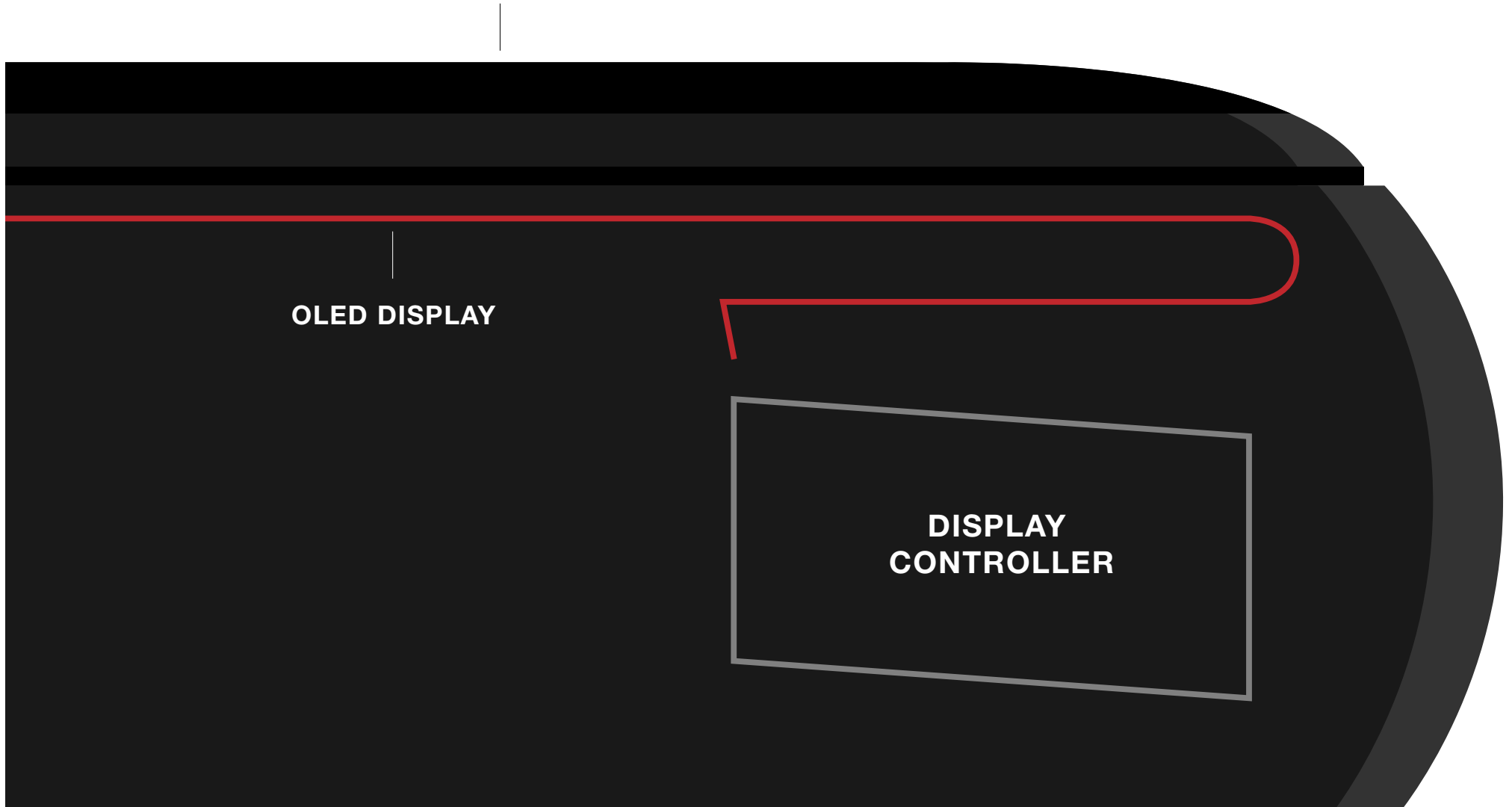
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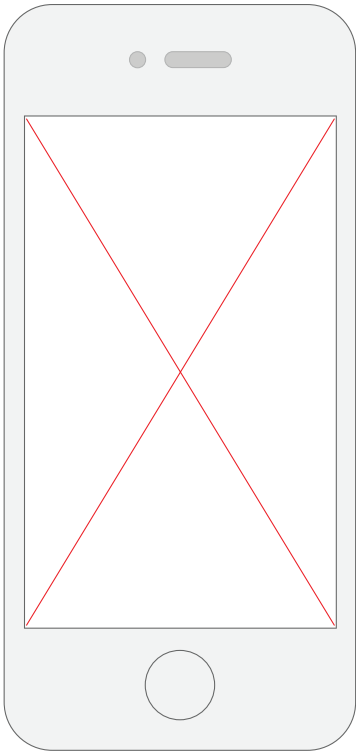
GLASS

OLED DISPLAY

**DISPLAY
CONTROLLER**



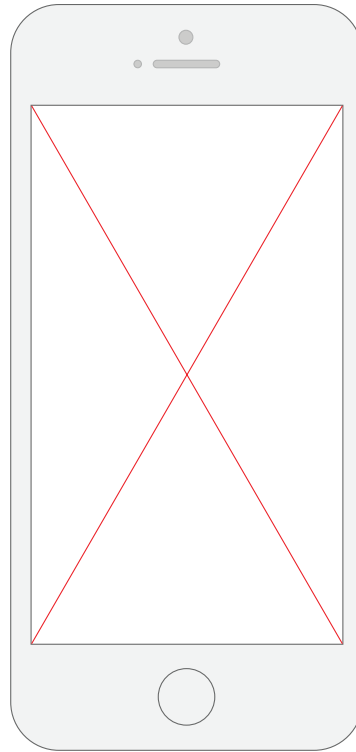
EVOLUTION OF **IPHONE** SCREENS



iPhone 1 - 4

SCREEN SIZE: 3.2 INCHES

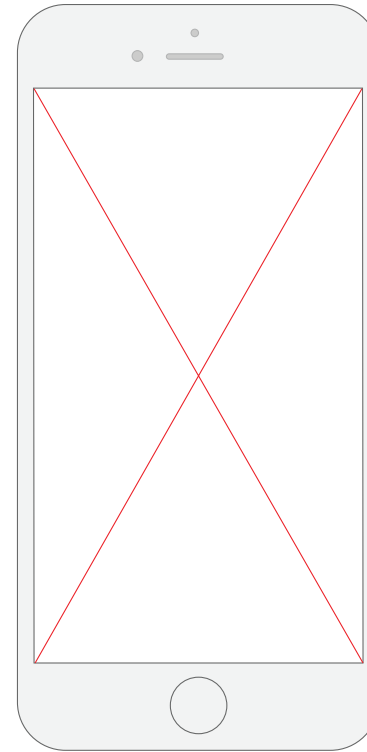
SCREEN TO BODY RATIO: 54%



iPhone 5

SCREEN SIZE: 4 INCHES

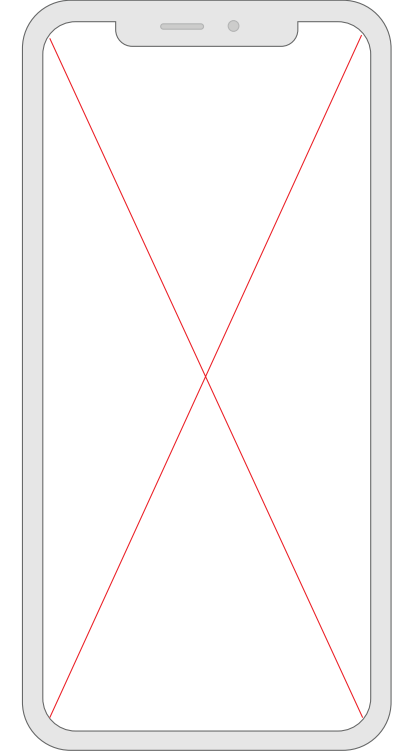
SCREEN TO BODY RATIO: 60.8%



iPhone 6 - 8

SCREEN SIZE: 4.7 INCHES

SCREEN TO BODY RATIO: 65.4%



iPhone X & 11

SCREEN SIZE: 5.8 INCHES

SCREEN TO BODY RATIO: 82.9%